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INTERNATIONAL PRELIMINARY EXAMINATION REPORTO

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(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference 7024477P117	FOR FURTHER ACTIO	Preliminary	cation of Transmittal of International Examination Report (Form PCT/IPEA/416)
nternational application No.	International filing date (da	ay/month/year)	Priority date (day/month/year)
PCT/US00/19325	17 JULY 2000		16 JULY 1999
nternational Patent Classification (IPC) IPC(7): G01B 09/02 and US Cl.: 350	or national classification and 6/451	I IPC	
Applicant PURDUE RESEARCH FOUNDATIO	N		
Examining Authority and is	s transmitted to the applica	has been prepa ant according to	red by this International Preliminary Article 36.
2. This KEPORT consists of a	a total of 3 sheets.		
This report is also accorbeen amended and are to (see Rule 70.16 and See	mpanied by ANNEXES, i.e. the basis for this report and/oction 607 of the Administra	or sheets containi	scription, claims and/or drawings which have ng rectifications made before this Authority. under the PCT).
These annexes consist of a	total of sheets.		
3. This report contains indication		ng items:	
I X Basis of the rep			
II Priority			
III Non-establishm	ent of report with regard	to novelty, inver	ntive step or industrial applicability
IV Lack of unity of	of invention		
V X Reasoned statem citations and exp	ent under Article 35(2) with planations supporting such s	h regard to novel tatement	ty, inventive step or industrial applicability;
VI Certain documen	ts cited		
VII Certain defects in	n the international application	on	
VIII Certain observati	ions on the international app	olication	
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Date of submission of the demand		Date of complet	ion of this report
15 FEBRUARY 2001		27 MARCH	2001
Name and mailing address of the IPE	A/US	Authorized offic	
Commissioner of Patents and Tra	ademarks	FRANK FO	In Many teeper
. Washington, D.C. 20231	ļ	Telephone No.	(703) 308-0956
Facsimile No. (703) 305-3230		reiephone 140.	(103) 300-0330

International application No.
PCT/US00/19325

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

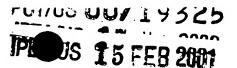
I. Bas	sis f	the report	
1. With r	regard	to the elements of the interr	actional application:*
		ernational application as	
=		scription:	
	nages	1-24	, as originally filed
		NONE	filed with the demand
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	pages	NONE	, as amended (together with any statement) under Article 19
	pages	25/1-25/5	, filed with the demand
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			f the international application (under Rule 48.3(b)). nished for the purposes of international preliminary examination (under Rules 55.2 and/
	or 55	.3).	
3. Wi	ith reg	ard to any nucleotide an ary examination was carr	d/or amino acid sequence disclosed in the international application, the international led out on the basis of the sequence listing:
	conta	nined in the international	application in printed form.
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	The		lently furnished written sequence listing does not go beyond the disclosure in the
	The		ion recorded in computer readable form is identical to the writen sequence listing has
4. X			ted in the cancellation of:
4.[스]	\mathbf{x}		NONE
1	骨	the description, pages	
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5.] This	report has been drawn as	if (some of) the amendments had not been made, since they have been considered to go
in	placem this_re	ent sheets which have been eport as "originally filed	as indicated in the Supplemental Box (Rule 70.2(c)).** furnished to the receiving Office in response to an invitation under Article 14 are referred to " and are not annexed to this report since they do not contain amendments (Rules 70.
**Ar	d 70.1 ny rep	7). lacement <u>sheet containin</u>	g such amendments must be referred to under item 1 and annexed to this report.



International application No.

PCT/US00/19325

statement			
Novelty (N)	Claims	2-26	Y
	Claims	NONE	N
Inventive Step (IS)	Claims	2-26	Y
inventive step (13)	Claims	NONE	I
Industrial Applicability (IA)	Claims	2-26	Y
mustrial Applicatinity (IA)	Claims	NONE	^
Claims 2-26 meet the criteria set out in PCT method for infrared spectral imaging of a san scanning speed of the spectrometer; b) causin detector to measure the absorption of light by	nple using a sp ig the spectrom	ectrometer and a sensor, comprising the seter to scan the sample with infrared ligh	steps of a) selecting a t; c) triggering the
predetermined number of times.			_
NONE NEW CITATIONS			



What is claimed:

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- 2. A method for infrared spectral imaging of a sample using a spectrometer and a sensor, comprising the steps of:
 - a) selecting a scanning speed of the spectrometer;
 - b) causing the spectrometer to scan the sample with infrared light;
 - triggering the detector to measure absorption of light by
 the sample upon starting the scan; and
 - d) repeating steps (b)-(c) a predetermined number of times.
- 3. The method of claim 2 wherein the sample comprises a combinatorial library.
 - 4. The method of claim 3 further comprising forming the combinatorial library with discrete quantities of a plurality of different samples.
 - 5. The method of claim 3 wherein the sensor comprises a focal plane array.
 - 6. The method of claim 5 wherein the spectrometer includes an interferometer.
 - 7. The method of claim 6 wherein the spectrometer includes optical lenses suitable for use in the IR spectral range.
- 8. The method of claim 7 wherein the combinatorial library is transparent to infrared radiation.
 - 9. The method of claim 7 wherein the combinatorial library is in contact with a substrate reflective of infrared light.
- 10. The method of claim 7 wherein the sample is in contact with an infrared transparent prism with a refractive index higher than the sample.

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- 11. The method of claim 7 wherein the lenses comprise material selected from the group consisting of calcium flouride (CaF₂), zinc selenide (ZnSe), and germanium (Ge).
- 12. A method for evaluating a plurality of different samples comprising:

forming a library of discrete quantities of the plurality of different samples, placing the library in the sample chamber of a spectrometer, the spectrometer comprising a source of infrared light, an interferometer, and a focal plane array,

selecting a scanning speed of the spectrometer,

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causing the spectrometer to scan the library with infrared light at predetermined time intervals,

detecting the infrared light absorbed by the library with the focal plane array at the predetermined time intervals,

wherein spatially resolved time series of absorbance spectra of the library are determined.

13. The method of claim 12 wherein:

the spectrometer comprises focusing and condensing optics comprising at least one lens suitable for use in the IR spectral range.

14. The method of claim 12 further comprising:

exposing the library to controlled conditions while illuminating the library with infrared light to evaluate the plurality of samples under the controlled conditions.

- 15. The method of claim 14 further comprising:
- assigning one or more time series of absorbance spectra to each of the different samples of the library,

evaluating the different samples based on the assigned absorbance spectra.

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- 16. The method of claim 12 wherein the at least one lens comprises material selected from the group consisting of calcium flouride (CaF₂), zinc selenide (ZnSe), and germanium (Ge).
- 17. A method for evaluating a plurality of different samples comprising:

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forming a library of discrete quantities of the plurality of different samples, exposing the library to controlled conditions,

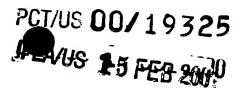
obtaining time series of absorbance spectra of the samples in the library while exposing the library to the controlled conditions by:

- (a) causing a spectrometer to illuminate the library with infrared light at a constant scanning speed, the spectrometer comprising a source of infrared light, an interferometer, focusing optics, condensing optics, and a focal plane array,
- (b) detecting the infrared light absorbed by the library with the focal plane array
- (c) determining absorbance spectra for each of the samples in the library from the detected infrared light
 - (d) repeating (a) through (c) a predetermined number of times.
- 18. The method of claim 17 wherein:

the focusing and condensing optics comprise at least one lens suitable for use in the IR spectral range.

- 19. The method of claim 18 wherein the at least one lens comprises materials selected from the group consisting of calcium flouride (CaF₂), zinc selenide (ZnSe), and germanium (Ge).
- 25 20. The method of claim 19 further comprising: selecting a desired spectral region,

employing a filter to only allow light from the selected spectral region to be collected.



21. A method for infrared spectral imaging of a combinatorial library using a spectrometer and a detector, comprising:

selecting a scanning speed of the spectrometer, the spectrometer having an interferometer comprising at least one moveable mirror, the scanning speed selected by selecting a speed of the mirror,

causing the spectrometer to illuminate the combinatorial library with midinfrared light,

triggering the detector to measure absorption of light by discrete samples of the combinatorial library upon starting the scan,

repeating steps (b)-(c) a predetermined number of times.

- 22. The method of claim 21 wherein the spectrometer includes condensing optics to focus the mid-infrared light on the detector, the detector comprising a focal plane array.
- 23. A method for infrared spectral imaging of a combinatorial library using a spectrometer and a detector, comprising the steps of:
 - a) selecting a first retardation of the spectrometer;
 - b) illuminating the sample with infrared light emitted by the spectrometer;
 - c) sending a trigger signal from the spectrometer to the detector, thereby causing recording of a data set by the detector:
 - selecting another retardation of the spectrometer after recording a single data set;
 - e) repeating steps (b)-(d) until a predetermined number of retardations have been selected; and
 - f) repeating steps (a)-(e) until a predetermined number of interferograms of the sample have been collected.



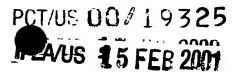
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- 24. The method of claim 23 wherein the spectrometer includes condensing optics to focus the infrared light on the detector, the detector comprising a focal plane array.
- 25. The method of claim 24 wherein the spectrometer includes optical lenses suitable for use in the IR spectral range.
- 26. The method of claim 25 wherein the lenses comprise material selected from the group consisting of calcium flouride (CaF₂), zinc selenide (ZnSe), and germanium (Ge).



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